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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,249	03/17/2004	Ralf Mauritz	21718 US-as	5270

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EXAMINER
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GROSS, CHRISTOPHER M

ART UNIT	PAPER NUMBER
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1639

NOTIFICATION DATE	DELIVERY MODE
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03/29/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/802,249	MAURITZ ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	CHRISTOPHER M. GROSS	1639	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 February 2011.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 13 and 15-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 13 and 15-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The examiner charged with the present application has once changed again. See contact information below.

Responsive to communications entered 2/9/2011.

Claims 1-3, 13, and 15-22 are currently pending.  
Claims 1-3, 13 and 15-22 are under consideration.

### ***Priority***

This application was filed 3/17/2004 and application claims foreign priority to EPO 03006098.2 (3/19/03). Receipt is as previously acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Election/Restrictions***

Applicant's election without traverse of Group I (Claims 1-22) in the replies filed on 10/18/06 and 3/6/07 is as previously acknowledged.

Applicant's election without traverse of the following species:

A.) nucleic acids for the biopolymers;

B.) fluorescent groups, specifically, stilbene, as the detectable protecting groups;

C.) Compound (f) in Figure 5 as the core structure. Applicant's core structure was not found in the prior art, thus the search has been extended as set forth below.

### ***Withdrawn Claim Rejections and Objections***

The objections to claim 1 are hereby withdrawn in view of applicant's amendments thereto.

The rejection of claims 1-3, 13 and 15-22 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement with regard to "new matter" is hereby withdrawn in view of applicant's amendments.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 13, 15-22 are rejected under 35 U.S.C. 102(b) as being anticipated by **Agris** (US Application Publication 20020045167; of record).

The claimed subject matter per claim 1 is drawn to a quality control method for achieving complete deprotection of protected reactive groups in on-chip synthesis of a biopolymer array, the method comprising

- (a) synthesizing a plurality of biopolymer species on an array from monomeric or oligomeric nucleotide building blocks comprising detectable protecting groups coupled directly to amino groups of the nucleotide building blocks, wherein the detectable protecting groups remain coupled until synthesis of the biopolymer array is complete,
- (b) taking one or more steps to cleave the detectable protecting groups,
- (c) determining a degree of deprotection by detecting any of the detectable protecting groups remaining on the array after cleavage, and
- (d) repeating steps (b) and (c) until the detectable protecting groups are no longer detected, indicating that complete deprotection is achieved,

wherein the quality control method is performed entirely on-chip and wherein the synthesized biopolymer are not destroyed by practice of the quality control method

**Agris** teaches, throughout the document and especially the abstract and paragraphs 0002-0006 and figure 11, antibodies specific for oligonucleotide protecting groups applied toward detecting incomplete deprotection on microarrays.

In paragraphs 0156-0157, Agris suggest the antibodies may be used on chips such as developed by Fodor, etc. which are made by synthesizing a plurality of biopolymer species on an array from monomeric or oligomeric nucleotide building blocks comprising detectable protecting groups coupled directly to amino groups of the nucleotide building blocks, wherein the detectable protecting groups remain coupled until synthesis of the biopolymer array is complete, as set forth in claim 1a. In figure 8, Agris takes a step to cleave detectable protecting groups such as Bz and ipr-Pac, as set forth in claim 1b; with said antibodies, determine the degree of deprotection by detecting any of Bz and ipr-Pac remaining on an array after cleavage, as set forth in claim 1c; and re-deprotect until the detectable protecting groups are no longer detected, indicating that complete deprotection is achieved, as set forth in claim 1d. Antibody binding does not destroy the oligonucleotides as set forth in the second wherein clause of claim 1.

In paragraph 0037, Argis et al indicate the method may be used with fluorescent protecting groups such as fluorenylmethoxycarbonyl, reading on claim 2.

Said oligonucleotide reads on the nucleic acid (elected species) of claim 13.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2, 13, 15-22 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Agris** (US Application Publication 20020045167; of record) in view of **Nagaich et al** (1989 Nucleic Acids Research 17: 5125-5134)

**Agris** is relied on as above.

**Agris** does not teach stilbene protecting groups, such as set forth in claim 3.

**Nagaich et al** teach, throughout the document and especially figure 1, stilbene protecting groups (elected species) for cytidine, adenine and guanine nucleosides reading on claim 3.

It would have been *prima facie* obvious for one of ordinary skill in the art, at the time the claimed invention was made to utilize the stilbene protecting groups of Nagaich et al in making microarrays and analysis of deprotection thereof in the manner of Agris.

One of ordinary skill in the art would have been motivated to utilize the stilbene protecting groups of Nagaich et al in making microarrays and analysis of deprotection thereof in the manner of Agris for the advantages of: (i) stability of the monomers; (ii) milder conditions for deprotection resulting in negligible side products during synthesis; and (iii) above all greater hydrophobicity greater, as explicitly noted by Nagaich et al in last sentence of the abstract.

One of ordinary skill in the art would have had a reasonable expectation of success in applying the stilbene protecting groups toward preparing and analyzing biochips in the manner of Agris since each reference is directly concerned with nucleotide exocyclic amine protection, thus the teachings of Nagaisch et al fall squarely in the scope of technology of interest to Agris.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the **second** paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim(s) 15-22 is/are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships concern the term "iopolymer" It is not clear what the structure is (metes and bounds are) of a "iopolymer".

Alternatively, claim 15 recites the limitation "the iopolymer synthesis" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

In accordance with MPEP 2173.02: If the language of the claim is such that a person of ordinary skill in the art could not interpret the metes and bounds of the claim so as to understand how to avoid infringement, a rejection of the claim under 35 U.S.C. 112, second paragraph, would be appropriate. See *Morton Int'l, Inc. v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470, 28 USPQ2d 1190, 1195 (Fed. Cir. 1993).

As currently written, the metes and bounds of the claims are unascertainable. Therefore, claim 15 and all dependent claims are rejected under 35 USC 112, second paragraph.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER M. GROSS whose telephone number is (571)272-4446. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel can be reached on 571 272 0718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CHRISTOPHER M GROSS/  
Primary Examiner, Art Unit 1639

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